

WHAT IS CLAIMED IS:

1. An insulation-displacement connector connecting apparatus (100) for connecting an insulation-displacement connector (20) having a housing (22), at least one insulation-displacement terminal (23) mounted in the housing (22) and configured for connection with a plurality of wires (W; WH), and a cover (21) to be mounted on the housing (22), comprising:

a pressure-receiving table (140; 400) for at least partly receiving the housing (22) with the insulation-displacement terminal (23) mounted therein;

a press unit (200; 500) comprising, as connection-assisting parts (223-226; 450; 460; 470), a wire pushing device (223; 460) for pushing the wires (W; WH) mounted in the housing (22) on the pressure-receiving table (140; 400) into the insulation-displacement terminal (23) mounted in the housing (22) and a cover holder (224; 470) for holding the cover (21) of the insulation-displacement connector (20) to mount the cover (21) on the housing (22) after the wires (W; WH) are pushed into the insulation-displacement terminal (23), the press unit (200; 500) further comprising means for pressing the respective connection-assisting parts (223-226; 450; 460; 470) toward the pressure-receiving table (140; 400); and

a drive controlling means (310; 320) for controllably driving the press unit (200; 500) so as to sequentially press the wire pushing device (223; 460) and the cover holder (224; 470).

2. An insulation-displacement connector connecting apparatus according to claim 1, wherein the press unit (200; 500) further comprises, as a connection-assisting part (223-226; 450; 460; 470), a wire checking device (222; 450) for checking the wires (W; WH) before the wires (W; WH) are pushed by the wire pushing device (223; 460), and the drive controlling means (310; 320) comprises a discriminating portion for judging (S6) whether a state of the wires (W; WH) is satisfactory when the wire checking device (222; 450) of the press unit (200; 500) is driven, the driving control means (310; 320) permitting (S8) the press unit (200; 500) to drive the wire pushing device (223; 460) and the cover holder (224; 470) if the discriminating portion judges (S6) that the state of the wires (W; WH) is satisfactory and hinders (S7) the operation of the press unit (200; 500) if the discriminating portion judges (S6) that the state of the wires (W; WH) is unsatisfactory.

3. An insulation-displacement connector connecting apparatus according to claim 1, wherein the pressure-receiving table (140; 400) is movable with respect to a casing (510) of the press unit (200; 500) between a mounting position where the wires (W; WH) can be mounted and a pressure-receiving position where the pressure-receiving table (140; 400) receives pressure from the press unit (200; 500).

4. An insulation-displacement connector connecting apparatus according to claim 1, wherein the press unit (200; 500) comprises:

a press (210; 540) substantially directly above the pressure-receiving table (140; 400) for performing a pressing operation,

a reciprocally movable unit (220; 600) for carrying the connection-assisting parts (223-226; 450; 460; 470) and reciprocally movable within a range of a specified stroke,

a switching device (230; 620) for switching the respective connection-assisting parts (223-226; 450; 460; 470) to a pressing position in the press (210; 540) via the reciprocally movable unit (220; 600) in an order of the wire pushing device (223; 460) and the cover holder (224; 470), and

a transmitting means (211; 212; 600) for transmitting a driving force of the press (210; 540) to the connection-assisting part (223-226; 450; 460; 470) at the pressing position.

5. An insulation-displacement connector connecting apparatus according to claim 4, wherein the reciprocally movable unit (220) comprises a shank (211) detachably mountable on a shank holder (212) of the press (210), and an elevatable block (227) for each of the connection-assisting parts (223-226) and being individually movable towards and away from the pressure-receiving table (140).

6. An insulation-displacement connector connecting apparatus according to claim 4, wherein the reciprocally movable unit (600) comprises an elevatable plate (602) adapted to carry the respective connection-assisting parts (450; 460; 470) and being directly driven by the press (540) to move towards and away from the pressure-receiving table (140).

7. An insulation-displacement connector connecting apparatus according to claim 6, wherein the press unit (500) is releasably mounted to the pressure-receiving table (400) fixedly mounted on a wire assembling board (1).

8. An insulation-displacement connector connecting apparatus according to claim 1, wherein the pressure-receiving table (140; 400) and the press unit (200; 500) are positioned with respect to each other by means of at least one pin (144; 602a) provided on one (140; 500) of the pressure-receiving table (140; 400) and the press unit (200; 500) and by a corresponding recess (144a; 404c) provided on the other (200; 400) of the pressure-receiving table (140; 400) and the press unit (200; 500).

9. An insulation-displacement connector connecting method for connecting an insulation-displacement connector (20), having a housing (22), at least one insulation-displacement terminal (23) mounted in the housing (22) for connecting a plurality of wires (W; WH), and a cover (21) to be mounted on the housing (22), comprising the following steps:

positioning the housing (22) of the insulation-displacement connector (20) on a pressure-receiving table (140; 400),

pressing the wires (W; WH) into connection with the insulation-displacement terminal (23) by means of a wire pushing device (223; 460) for pushing the wires (W; WH) and

subsequently mounting the cover (21) on the housing (22) after the wires (W; WH) are pushed into the insulation-displacement terminal (23) by means of a cover holder (224; 470) for holding the cover (21) of the insulation-displacement connector (20).

10. An insulation-displacement connector connecting method according to claim 9, further comprising the step of checking the wires (W; WH) before they are pushed by the wire pushing device (223; 460) for judging (S6) whether or not a state of the wire (W; WH) is satisfactory when the wire checking device (222; 450) of the press unit (200; 500) is driven,

the wire pushing device (223; 460) and the cover holder (224; 470) being driven (S8) if it is judged (S6) that the state of the wires (W; WH) is satisfactory, whereas the wire pushing device (223; 460) and the cover holder (224; 470) being hindered (S7) from operation if it judged (S6) that the state of the wires (W; WH) is unsatisfactory.

11. An insulation-displacement connector connecting apparatus (100) for connecting an insulation-displacement connector (20) having a housing (22), at least one insulation-displacement terminal (23) mounted in the housing (22) and configured for connection with a plurality of wires (W; WH), and a cover (21) to be mounted on the housing (22), comprising:

a press (210; 540) movable along a first axis for performing a pressing operation;

a pressure-receiving table (140; 400) having a housing-receiving portion (140c; 404a) configured for receiving the housing (22) with the insulation-displacement terminal (23) mounted therein, the pressure-receiving table (140; 400) being disposed such that the housing-receiving portion (140c; 404a) is substantially aligned with the first axis;

a plurality of connection assisting parts (223-226; 450; 460; 470), at least one of said connection assisting parts (223-226; 450; 460; 470) being disposed substantially on said first axis and between the pressure-receiving table (140; 400) and the press (210; 540); and

a reciprocally movable unit (220; 600) connected to the connection-assisting parts (223-226; 450; 460; 470) and operative for moving the connection assisting parts (223-226; 450; 460; 470) along a second axis substantially perpendicular to said first axis for positioning selective ones of said connection assisting parts (223-226; 450; 460; 470) in line with the first axis for performing specified connection assisting functions on the housing (22) and the insulation-displacement terminal (23) on the pressure receiving table (100; 400).

12. The insulation-displacement connector connecting apparatus of claim 11, wherein the pressure-receiving table (140) is selectively movable along a third axis substantially perpendicular to said first and second axes from a mounting position where the housing-receiving portion (140c) is offset from said first axis and a pressure-receiving position where said housing-receiving portion (140c) is aligned with said first axis.

13. The insulation-displacement connector connecting apparatus of claim 1, wherein the connection-assisting parts comprise a wire pushing device (223; 460) for pushing the wires (W; WH) into the insulation-displacement terminal (23) mounted in the housing (22) on the pressure-receiving table (140; 400).

14. The insulation-displacement connector connecting apparatus (100) of claim 13, wherein the connection-assisting parts further comprise a cover holder (224; 470) for holding the cover (21) of the insulation-displacement connector (20) and mounting the cover (21) on the housing (22) after the wires (W; WH) are pushed into the insulation-displacement terminal (23).



15. The insulation-displacement connector connecting apparatus of claim 14, wherein the connection-assisting parts further comprise a wire checking device (222; 450) for checking the wires (W; WH) before the wires (W; WH) are pushed by the wire pushing device (223; 460), and the drive controlling means (310; 320) comprises a discriminating portion for judging (S6) whether a state of the wires (W; WH) is satisfactory when the wire checking device (222; 450) of the press unit (200; 500) is driven, the driving control means (310; 320) permitting (S8) the press unit (200; 500) to drive the wire pushing device (223; 460) and the cover holder (224; 470) if the discriminating portion judges (S6) that the state of the wires (W; WH) is satisfactory and hinders (S7) the operation of the press unit (200; 500) if the discriminating portion judges (S6) that the state of the wires (W; WH) is unsatisfactory.